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Xylaria thailandica – a new species from southern Thailand

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Abstract —A new species, *Xylaria thailandica*, was collected from dead wood and fallen branches in southern Thailand. This fungus has upright, gregarious, cylindrical stromata that arise from a tomentose stipe and which is internally dark brown to black at the center but yellow around the perithecia. Its ascospores are inequilateral and with a germ slit that spirals lengthwise.

Key words — ascomycetes, *Xylariaceae,* decaying wood, fallen branches

Introduction

Fungi belonging in the genus *Xylaria* are saprophytic, endophytic, parasitic (Whalley 1985), or symbionts in insect nests (Hawksworth et al. 1995, Pélaez et al. 2008). They are characterized by upright, sessile, or stipitate stromata with cylindrical, clavate, or irregularly shaped fertile parts. Many species have been reported from different substrata throughout the world (Rogers & Samuels 1986, Bi et al. 1993, Rogers et al. 2005, Ju & Hsieh 2007, Ju et al. 2009, Rogers et al. 2008, Carmona et al. 2009, Hladki & Romero 2010, Fan & Lin 2011, Fournier et al. 2011, Rogers & Ju 2012).

Thailand is considered one area containing a high percentage of *Xylaria* species, and several studies have reported on their biodiversity (Carroll 1963, Schumacher 1982, Thienhirun 1997, Ruksawong & Flegal 2001, Chansrikul et al. 2008, Petcharat et al. 2012). As currently recognized, *Xylaria* is represented

in Thailand by 42 species. One recent collection that could not be identified as any known *Xylaria* species is described and illustrated herein as *Xylaria thailandica*.

Materials & methods

The specimens were collected from a natural plant site in a tropical rain forest in southern Thailand. Hand-cut sections of dried material revived in 70% ethyl alcohol were examined microscopically. Ascospore measurements were made from squash mounts in lactophenol and the dimensions were determined from 20 fully mature spores. A drop of Melzer's reagent was added to determine the amyloid iodine reaction. The photographs of stromata were taken using a Canon 550D DLSR digital camera. Cultures were obtained from ascospores using the single spore isolation technique and characterized on Potato Dextrose Agar (PDA) at room temperature (28–30 °C). All the specimens are kept at Department of Pest Management, Faculty of Natural Resources, Prince of Songkla University, Hatyai, Songkhla, Thailand (PSU-PM).

Taxonomy

Xylaria thailandica Srihanant, Petcharat & Lar.N. Vassiljeva, **sp. nov.** Fig. 1

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Differs from other species of *Xylaria* by its yellow-colored flesh, ascospores with a spiraling germ slit, and asci with an urn-shaped apical ring.

Type—Thailand, Nakorn si thammarat Province, para rubber plantation, on dead wood and fallen branches, 26. X. 2010, Natthapach Srihanant, (**holotype** PSU-PM 1059).

Etymology—Refers to Thailand, where this fungus was collected.

Stromata upright, gregarious, cylindrical, unbranched or (sometimes) branched at the stipe, with short to long acute sterile apices, 3–7 cm total length × 0.1–0.2 cm diam, externally at first brownish, becoming dark brown, then black; internally dark brown to black at core, but yellow around perithecia, texture soft, surface roughened by remnants of peeling layer and short dark brown hairs; hairs not evident in old material. Young stroma filiform, dark brown, but dull green at the top where the fruiting bodies produce conidia (asexual spores). Stipe short to long, filiform, with a broadened discoid base, covered with short brown hairs. Perithecia completely immersed, globose to spherical, 210–310 µm high × 135–250 µm diam, ostioles papillate. Asci 1.5–2 × 1–1.5 µm, apical ring urn-shaped, blue in Melzer's. Ascospores brown, unicellular, inequilateral, with broadly or narrowly rounded ends, 9–14.5 × 3–4.8 µm, with spiraling germ slit spore-length.

Colonies on PDA: Colonies growth 14 days at room temperature (28–30 °C) on PDA 9 cm diam., mycelium cottony, white with black color on the surface of the agar. Stromatic structures not forming on media.

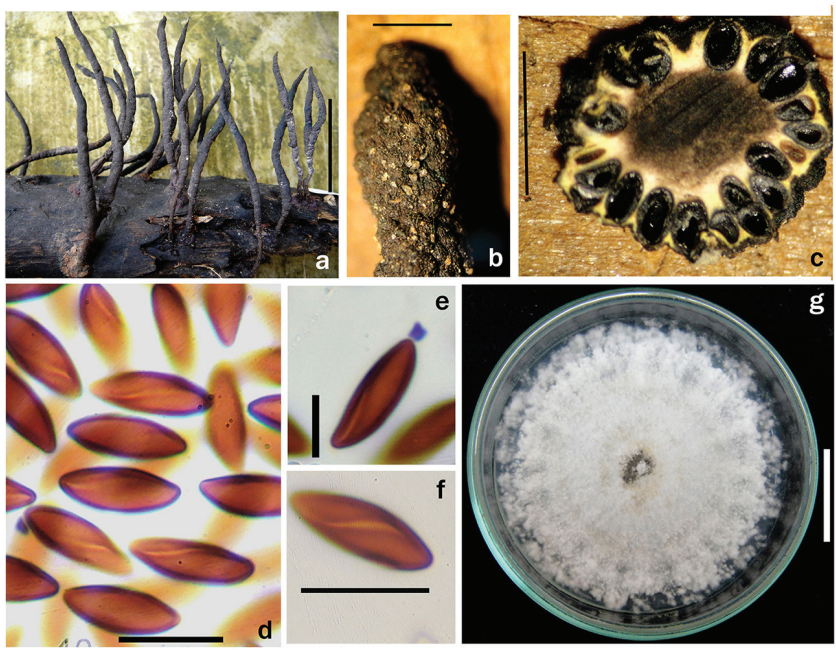

Fig. 1. *Xylaria thailandica* (holotype). A. Mature teleomorphic stroma on dead wood. B. Stromata surface with conspicuous perithecial mounds. C. Transverse section of a stroma with dark color at the core. D. Ascospores in lactophenol. E. Ascospore in Melzer's reagent with an urn-shaped apical ring. F. Ascospore in lactophenol with spiral germ slit. G. Colonies on PDA in a 5 cm petri dish at 10 days. Scale bars: A = 2 cm; B, C = 1 mm; D = 10 µm; E = 5 µm; F = 10 µm; G = 1 cm

Additional specimens examined—**THAILAND**, **Songkhla Province**, Prince of Songkla University, Khao khohong nature trail, on fallen branches 5.XII.2010, Natthapach Srihanant (PSU-PM 1060); **Suratthani Province**, oil palm plantation, on dead wood in 24. I. 2011, Natthapach Srihanant (PSU-PM 1061).

Comments—*Xylaria thailandica* differs from other species on wood (Fournier et al. 2011, Hladki & Romero 2010, Ju et al. 2009, Rogers & Samuels 1986, Roger et al. 2008) by its yellow flesh and ascospores with spiraling germ slits.

This species can be separated from *X. longipes* var. *tropica* F. San Martín & J.D. Rogers (Thienhirun 1997) and *X. longipes* Nitschke (Rogers et al. 2008), which have larger ascospores and asci with a differently shaped apical apparatus.

The stromatal morphology of *X. thailandica* is close to *X. cinerea* J. Fournier & M. Stadler (Fournier et al. 2011), which differs by its larger ascospores with a slightly sinuous germ slit.

Comparisons between *X. thailandica* and other species are shown in Table 1.

Table 1. Comparison of some wood-inhabiting species of *Xylaria* with the new taxon *X. thailandica*.

Species	Spore size (µm)	Germination slit	Apical apparatus
X. thailandica	9–14.5 × 3–4.8	Spiral, full spore-length	Urn-shaped
X. apiculata	16–30 × 5–9	Straight, full spore-length	Minute
X. castorea	8–14 × 4.5–6.5	Straight, probably full length	Minute
X. cinerea	13–17 × 5–6	Straight to slightly sinuous	Tubular to urn-shaped
X. grammica	12–14.5 × 4–6.5	Straight, full spore-length	Rectangular
X. hypoxylon	10–15.5 × 4.5–6.5	Straight to undulate, less than full length	Wedge-shaped
X. karsticola	11–14.5 × 4.2–6	Conspicuous straight, full spore length	Tubular with a slightly flared apex
X. longipes	9–15 × 5–6	Spiral, around spore	Not seen
X. longipes var. *tropica*	14–16.5 × 5–6	Spiral, full spore-length	Quadrate to rectangular
X. multiplex	9.5–11 × 4.5–5	Straight, almost full spore length at the ventral side	Not seen
X. zealandica	22–31 × 7.5–9	Straight to undulate, slightly less than spore length	Urn-shaped

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